

WHAT IS CLAIMED IS:

1. An optical device comprising:
an optical cable having a substantially axial symmetry, the optical cable comprising a transparent envelope surrounding a core doped with phosphorescent or fluorescent material, said transparent envelope comprising a cladding layer; and
a light source comprising an inner electrode, an outer electrode, and an active area located between said inner electrode and said outer electrode, wherein said light source and said optical cable are integrated, and wherein said light source has an axial symmetry and is positioned coaxially with respect to the axis of said optical cable, and wherein said inner electrode comprises a transparent material to permit light generated in said active area to propagate outside said light source and into said optical cable.
2. The device according to Claim 1, wherein the envelope further comprises a jacket layer surrounding said cladding layer
3. The device according to Claim 1, wherein said outer electrode comprises reflective material.
4. The device according to Claim 1, wherein said light-source is flexible.
5. The device according to Claim 1, wherein said light-source comprises a mono- or multi-layer organic light-emitting diode (OLED).
6. The device according to Claim 1, wherein said outer electrode comprises transparent material and said light-source comprises an additional outer layer that is reflective.
7. The device according to Claim 1, further comprising at least one mirror on each side of an optically pumped region of the optical cable, wherein one mirror is substantially opaque and the another mirror is at least partially transparent.
8. The device according to Claim 1, wherein the efficiency of absorption of light in said core, said light produced by said light source, is a function of P_e/P_c .
9. The device according to claim 7, wherein the efficiency is controlled by choosing a desirable ratio of P_e/P_c .

10. The device according to Claim 1, wherein the device is configured to generate optical signals.

11. The device according to Claim 9, wherein said optical signal is substantially constant.

12. The device according to Claim 1, wherein the device is configured to amplify or repeat optical signals.

13. The device according to Claim 6, wherein said device is configured as a laser generator.

14. The device according to Claim 1, wherein said device is configured for introspection.

15. The device according to Claim 12, wherein said device is configured for endoscopy.

16. A method of making an optical device, the method comprising:

forming an optical fiber having an axial symmetry;

surrounding a fiber core of the optical cable with a transparent envelope, the fiber core being doped with phosphorescent or fluorescent material, wherein said transparent envelope comprises a cladding layer;

integrating a light source with the optical cable, the light source comprising an inner electrode, an outer electrode, and an active area located between said inner electrode and said outer electrode; and

positioning the light source coaxially with respect to the axis of said optical cable, wherein said inner electrode comprises a transparent material to permit light generated in said active area to propagate outside said light source and into said optical cable.

17. The method according to Claim 16, further comprising surrounding said cladding layer with a jacket layer.

18. The method according to Claim 16, wherein said outer electrode comprises reflective material.

19. The method according to Claim 16, wherein said light-source is flexible.

20. The method according to Claim 16, wherein said light-source comprises a mono- or multi-layer organic light-emitting diode (OLED).

21. The method according to Claim 16, wherein said outer electrode comprises transparent material and said light-source comprises an additional outer layer that is reflective.

22. The method according to Claim 16, further comprising positioning at least one mirror on each side of an optically pumped region of the optical cable, wherein one mirror is substantially opaque and the another mirror is at least partially transparent.

23. The method according to Claim 16, further comprising generating optical signals.

24. The method according to Claim 16, further comprising generating substantially constant optical signals.

25. The method according to Claim 16, further comprising performing at least one of amplification and repeating of optical signals.

26. The method according to Claim 16, further comprising generating laser.